REMARKS

Claims 57-158 remain pending after amendment.

Claim Amendments

By this amendment, claim 57 is amended to state that the sulphur source is elemental sulphur. Support for this amendment resides at page 4, line 11. No new matter is added by this amendment.

Allowable Subject Matter

Applicants acknowledge the indication of allowable subject matter of claims 57-69. Claims 67, 68, 97, 100, 137, 138, 149 and 150 are also indicated as being directed to allowable subject matter if rewritten in independent form. However, for the reasons indicated in detail below, and in view of the above amendments, all pending claims are believed to define patentable subject matter.

Withdrawn Claims

Claims 63, 86, 102, 118, 144 and 156 stand withdrawn from examination. However, given applicant's belief that all pending claims are allowable irrespective of the type of metal salt employed, applicant respectfully requests that the withdrawn claims be rejoined with the remaining claims upon allowance of the application.

Prior Art Rejection under 35 USC 103(a)

Claims 57-62, 64-66, 69-85, 87-96, 98, 99, 101, 103-117, 119-136, 139-143, 145-148, 151-155, 157 and 158 stand rejected under 35 USC 103(a) as being unpatentable over Jackson et al '011 in view of Riley et al '443, Wawretschek et al '741, Herschler '421, Herschler '039, and Bounous et al '571. This rejection respectfully is traversed to to the extent deemed to apply to the claims as amended.

Claim 57 Amendment

In response, claim 57 is amended to state that the source of sulphur is elemental sulphur. As the Examiner has indicated that claims directed to the use of sublimed sulphur are allowable, and as sublimed sulphur is a species of elemental sulphur, claim 57 and the claims which depend therefrom (i.e.. claims 57-69) should be deemed to be allowable by the Examiner.

Description of Cited Prior Art

(1) Jackson '011

The purpose of the composition disclosed in Jackson is to supplement the specific micronutrient and phytochemical needs of a woman during each of her adult life stages thereby promoting her well being and preventing or reducing the health risks to which she is exposed (see column 1, lines 4-9). These health risks include "some cancers". It is

disclosed that the incidence and risk of these conditions varies with each life stage and has been shown to be influenced by diet and dietary supplements.

Jackson discloses (column 2, line 34 – column 3, line 21) compositions suitable for preventing or reducing the risk of several conditions including some cancers at three different stages of the woman's life. Each of these compositions consists of the same components. However, the amounts of the individual components vary according to different risks of the conditions at the different life stages.

The first embodiment is a supplement for pre-menopausal women and consists of about 0.5 to about 1.5 mg copper, about 100 to about 1000 mg vitamin C and 13 other components (including iron, zinc and manganese). The second embodiment is a supplement for premenopausal and menopausal women and consists of about 1.5 to about 2.5 mg copper, about 200 to about 1000 mg vitamin C and the same 13 other components (in different amounts from the first embodiment). The third embodiment is a supplement for post-menopausal women and consists of about 2.5 to about 3.5 mg copper, about 300 to about 1000 mg vitamin C and the same 13 other components (in different amounts from the first and second embodiments). Each supplement may be formulated as a tablet or a capsule (see column 3,lines 22-26).

Jackson does not disclose a composition comprising salicylic acid or any source of assimilable sulphur, let alone elemental sulphur. In addition, there is no disclosure of the use of the supplements to treat cancer. While Jackson discloses that the supplements can

be used to prevent or reduce the risk of cancer, as the skilled person would readily appreciate, the biochemical mechanisms involved in the body to prevent cancer are different from those mechanisms to treat cancer. It could not possibly be expected that a composition useful in preventing cancer would necessarily treat cancer. Therefore, it cannot be implied that the supplements designed to prevent or reduce the risk of cancer would be useful in the treatment of cancer.

The supplements of Jackson would require at least 200 mg and possibly as much as 1500 mg of calcium in order to improve bone density (see, for example, column 5, lines 32-45). Calcium is known to reduce adsorption of other minerals such as copper and manganese if it is present in sufficiency quantity. Reduced adsorption of these materials could lead to a deficiency of minerals necessary for the formation of enzymes such as superoxide dismutase which "mop up" superoxide free radicals at a phenomenal rate. '

It is known that excess free radical formation causes a reduction in immune status leading to a mutation of body cells and, hence, cancer. Therefore, there is risk that the use of a large amount of calcium in the Jackson supplements might actually cause cancer rather than prevent it. In any event, the Jackson supplements would not be considered by the skilled person to be suitable for the treatment of cancer. Indeed, Jackson does not claim that the supplements could be used in this manner.

(2) Riley '443

Riley discloses at column 1, lines 20-26 a modular system of multivitamin and mineral supplementation to replace micronutirients lost as a result of lifestyle factors and inadequate diet thereby improving health by insuring adequate intake of micronutrients needed for disease prevention. It is disclosed (column 6, line 62 to column 7, line 6) that the nutritional modular systems disclosed in Riley *reduce the risk* of chronic disease such as cancer.

Modules 5 and 6 of Riley consists of copper, aspirin, and vitamin C together with 24 other components (including manganese, iron and zinc). Module 5 has 0.5 mg copper, 20 mg aspirin and 150 mg vitamin C and module 6 has 0.5 mg copper, 81 mg aspirin and 150 mg vitamin C.

Riley does not disclose a composition comprising any source of assimilable sulphur, let alone elemental sulphur. In addition, there is no disclosure of the use of the supplements to treat cancer and, as indicated above in the discussion of the Jackson reference, the skilled person would not expect a composition useful in the prevention of cancer to also necessarily be useful in the treatment of cancer.

While Riley discloses at column 16, lines 22-28 that antioxidant micronutrients enhance the ability of aspirin to reduce the risk of coronary heart disease and certain cancers, the reference is concerned essentially with preventing vascular disease. For example, Riley discusses the benefits of aspirin for both fatal and non-fatal myocardial

infarctions and that most of the physiological benefits associated with aspirin are due to its ability to decrease blood clotting through decreased platelet agglutination. The use of aspirin to delay and inhibit thrombin generation in whole blood is also discussed , as is the idea of increased dosages of aspirin in acute and preventative therapy of vascular diseases due to its free radical scavenging ability. Riley then discusses a study (see Example 1) which suggests that the low dose aspirin taken daily simultaneously with the AM formulation of module 1 is capable of inducing significantly increased bleeding times compatible with the effects documented to reduce CHD.

Riley does not discuss any information regarding cancer except that diet has a relationship with cancer (column 9, lines 31-55), and that intake of antioxidants can help reduce the risk of certain cancers and that atomic and molecular DNA damage induces mutations and cytotoxic effects within cells that can increase the risk of CHD and cancer (column 15, lines 42-45).

(3) Wawretschek '741

Wawretschek discloses that the pharmacological action of a medicament which exhibits an affinity for linking with blood proteins may be reinforced by administering the medicaments with orotic acid or a physiological tolerable salt thereof. The orotic acid can be used as the orotate salt of the drug itself or in admixture with the drug as free orotic acid or as a specific salt thereof (see column 2, lines 31-34). Where orotic acid is

used in the form of a salt with the drug, Wawretschek exemplifies a propoxyphene orotate salt. Where orotic acid is used in the form of a salt that is separate from the drug, Wawrretschek only exemplifies the use of choline orotate.

There is no disclosure of the use of any metal salt of orotic acid, let alone a copper, manganese or zinc metal salt thereof. In addition, there is no disclosure of a composition comprising copper, vitamin C or sulphur, let alone a composition comprising all of these components. Further, there is no mention of neoplastic disease, let alone a disclosure of a treatment of such a disease.

(4) Herschler '421

Herschler discloses at column 1, lines 12-18 the use of methylsulphonylmethane (MSM) to ameliorate the symptoms of stress (specifically gastrointestinal upset, inflammation of the mucous membranes and allergic reactions). While MSM does not appear to actually treat "stress", it treats symptoms of stress which permits a more rapid return to normalcy. See column 4, lines 55-59.

Herschler discloses the use of MSM in combination with an analgesic such as aspirin to treat gastro-intestinal upset caused by the analgesic (see column 5, lines 45-55), the use of MSM in orange juice (hence, presumably vitamin C) for the maintenance of good health in humans (see column 6, lines 30-38), and the use of MSM in combination with ascorbic acid to treat pain associated with systemic inflammatory disorders in

humans, (column 6, line 60 to column 7, line 2), to heal wounds in hamsters (column 7, lines 30-47), and to treat vascular complications associated with diabetes in humans (column 8, lines 20-24).

There is no disclosure of the use of copper in any of the disclosed compositions. In addition, there is no disclosure of the use of any source of assimilable sulphur other than MSM, let alone elemental sulphur. Further, there is no disclosure of the use of the combination of MSM with aspirin and vitamin C. Herschler does not disclose the use of the disclosed compositions to treat neoplastic disease.

(5) Herschler '039

Herschler '039 discloses (see Abstract) that MSM is an assimilable form of sulphur. It also discloses at Example 36 that supplementation of the diet with 2 wt. % MSM can inhibit DMBA-induced mammary carcinoma in rats and that supplementation of the diet with 3 wt. % MSM in water can protect against otherwise lethal spontaneous mouse lymphomas (Example 37).

As with Herschler '421, there is no disclosure in Herschler '039 of the use of copper in any of the disclosed compositions. In addition, there is no disclosure of the use of any source of assimilable sulphur other than MSM, let alone elemental sulphur. Further, there is no disclosure of the use of the combination of MSM with aspirin and vitamin C. Furthermore, as Herschler '039 does not disclose a composition comprising

copper, salicylic acid, vitamin C and sulphur, it necessarily follows that the reference does not disclose the use of such a composition to treat neoplastic disease.

(6) Bounous '571

Bounous discloses a formula diet comprising whey protein concentrate to enhance mammalian immune response. The reference discloses, for example (column 16, lines 63-67), that the biological activity of the whey protein is dependent upon the undenatured conformation of the protein. Therefore, while whey protein does comprise proline residues within its primary amino acid structure, proline is not present in the diet as a free amino acid.

Bounous also discloses at column 6, lines 34-56 that the formula diet consists of undenatured whey protein concentrate and a protein-free diet powder containing, among other components, "vitamins and minerals". The "vitamins and minerals" consist of 53.3 mg vitamin C and 0.47 mg copper, together with 22 other components including iron and zinc. It is disclosed at column 24, lines 26-54 that the formula diet reduces the size of DMH-induced tumors in mice.

There is no disclosure in Bounous of a composition comprising salicylic acid, sulphur or proline as a free amino acid. The reference discloses at column 6, lines 46-56 that the vitamins and minerals were added in the amounts necessary to provide daily requirements for growing mice, and that the formula diet was designed to provide

adequate nutrition as demonstrated by normal body growth, serum protein and by the absence of hair loss, dermatitis, cataract, ataxia, fatty liver, etc. In other words, the vitamins and minerals are present in the formula diet to ensure that the test mice do not lack any of the micronutrients required for normal body function. Accordingly, there is no disclosure in the reference of the vitamin and mineral component of the formula diet having any effect on cancer.

The Examiner, despite the following basic deficiencies in the cited references relied upon in support of the rejection, takes the position that the claimed invention is an obvious variation of the cited references. However, the following deficiencies serve to rebut the position of the Examiner:

- Wawretschek may disclose the use of "salts of oronate" to enhance the efficiency of sodium salicylate, but it does not disclose the use of any metal salts (let alone copper, iron, zinc or manganese metal salts) as required by the claims.
- It is misleading to suggest that Bounous discloses the use of proline in the treatment of cancer, as proline is present merely as part of the primary structure of undenatured whey protein and not as a free amino acid as required by the claims.
- The treatment of cancer is only disclosed in Herschler '039 and Bounous. In Herschler, MSM in the diet provides the anti-cancer effect. In Bounouos, the anti-cancer effect is disclosed as being due to the undenatured whey protein and not to

the vitamins and minerals which are included in the formula diet merely to maintain normal body function of the mice.

With the above deficiencies in mind, applicants now address the patentability of the respective independent claims:

Claim 57

The Examiner indicates that claim 57 would be allowable if rewritten to require the presence of sublimed sulphur as the source of sulphur. As sublimed sulphur is merely the preferred form of elemental sulphur, and as there is also no suggestion of the use of elemental sulphur *per se* in the references, claim 57 is amended to require the presence of elemental sulphur.

Claim 57 and the associated dependent claims are accordingly believed to be allowable.

Claim 70

Claim 70 requires specific amounts of the various components. No component of the composition of claim 70 is common to the compositions described in each of the cited references. Modules 5 and 6 of Riley have the most components (3) in common with the claimed composition. Jackson and Bounous both have 2 components in common with the claimed composition. Copper and vitamin C are common in each of these prior art references. The following table depicts the amounts of these components (converted to

parts relative to 15 parts copper) in the various compositions disclosed in the prior art (the entries in bold are outside the scope of claim 70):

	Copper	Salicylate	Vitamin C	Sulphur
Jackson	15	-	3000	-
Riley (Module 5)	15	600	4500	-
Riley (Module 6)	15	**2430**	4500	-
Bounous	15	-	1701	-

The above table clearly shows that the references all teach the use of significantly more vitamin C than required by current claim 70. There is no suggestion in any of the references that would prompt the skilled person to consider reducing the amount of vitamin C in the prior art compositions to within the ranges required by the claim.

While Herschler discloses compositions comprising MSM with other salicylic acid or derivatives thereof or vitamin C, there is no disclosure of a composition having each of these components. Therefore, it necessarily follows that there is no disclosure of the relative proportions of the three components when in the same composition.

With this in mind, the skilled person does not have sufficient information to be able to determine the appropriate amounts of the components in a composition having copper, salicylic acid (or derivatives thereof), sulphur and vitamin C without either the exercise of inventive effort as applicants have done (or without the benefit of hindsight analysis of the prior art – which is improper).

The amounts of the recited components have been carefully selected by applicant to enhance an anti-cancer effect. For example, in a preferred embodiment consisting of copper gluconate, manganese gluconate, sodium salicylate and ascorbic acid, the constituents are administered in controlled quantities to enhance treatment effect.

It is noted that Riley states that the limitation of excess copper in the modules helps prevent negative effects of copper which can oppose the antioxidant effect of vitamin E. The Riley modules contain between 1 and 4 mg of copper, whereas applicant's preferred composition contains between 10 and 20 mg of copper. The noted amount of copper does not suffer from the disadvantages noted by Riley.

Claim 80

Claim 80 requires that the copper, salicylic acid, vitamin C, sulphur and, optionally, manganese, iron and zinc components are present in the composition as the sole pharmacologically active components, and that the composition is in the form of an orally administrable unit dosage form.

The composition disclosed in Jackson has 15 active components. In addition, Modules 5 and 6 of Riley have 27 active components. Further, there are no less than 24 vitamins and minerals in the formula of Bounous. All of the components in these compositions would be considered by one of ordinary skill in the art to be required. There is no suggestion in any of the cited references that would prompt the skilled person

to consider eliminating any of the components, let alone eliminating the components required to create a composition within the scope of Claim 80.

Claim 89

Claim 89 covers a method of treating neoplastic disease using a composition comprising copper, salicylic acid and vitamin C.

For the reasons given above, Jackson does not disclose a treatment of cancer. In addition, the composition disclosed in Jackson does not comprise a salicylic acid component. The use of compositions comprising a salicylic acid (or derivative thereof) component is disclosed in Riley, Wawretschek and Herschler '421 and '039. However, the disclosure in the context of a dietary supplement that can reduce the risk of cancer which, for the reasons given above, is not a treatment of cancer. In Wawretschek, the salicylate is present for its analgesic properties – there is no suggestion of its usefulness in the treatment of neoplastic disease. In the Herschler references, aspirin is present for its analgesic properties. Therefore, the skilled person is not motivated to consider using a composition comprising copper, salicylic acid and vitamin C in the actual treatment of neoplastic disease.

Claim 109

Claim 109 requires that the copper, salicylic acid, vitamin C and sulphur components and optionally, manganese, iron and zinc components, and the additional component(s) (such as additional vitamin C, one or more amino acids and nicotinic acid)

to be the sole pharmacologically active components. Therefore, the invention of this claim is neither taught nor suggested by the cited prior art.

Claim 121

The arguments offered in support of patentability of claim 89 apply equally to claim 121.

Claim 124

Claim 124 requires the presence of specific amounts of copper, sodium salicylate and vitamin C. The arguments presented in support of claims 70 and 89 apply equally to the patentability of claim 124.

Claim 135

Claim 135 is directed to a method which requires the listed active components to be the sole active components. The arguments presented in support of claims 80 and 89 thus apply equally to the patentability of claim 135.

Claim 146

The method of claim 146 requires the use of the product of claim 80. Thus, the arguments offered in support of the product of claim 80 and the method of claim 89 apply equally to the patentability of claim 146.

It is thus clear that the cited references fail to provide the requisite motivation and/or teachings to direct one of ordinary skill in the art to the claimed invention. Indeed, the Examiner has not presented a *prima facie* case of obviousness. One of ordinary skill

in the art, when faced with the teachings of the references, cannot arrive at the claimed invention *even with* the benefit of a hindsight analysis of the cited references due to the deficiencies in teachings of the references.

In summary, the cited references fail to teach or suggest the invention defined by the independent claims as discussed above, taken either singly or in combination. The independent claims, as well as the associated dependent claims, thus patentably distinguish over the cited prior art and should accordingly be found to be allowable.

In view of the above, the rejection is thus improper and should be withdrawn.

The application is now believed to be in condition for allowance, and an early indication of same is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

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